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ABSTRACT

Businesses are increasingly frustrated by the lack of workers with the basic skills needed to fill their entry-level jobs. Workers in existing jobs make many errors because of lack of skills, errors that cost businesses--and consumers--many dollars. Many solutions have been advanced to improve education. Twenty-two educational practices that work can be identified. Proposed solutions seem to center on coordination of programs, dollars, policies, and services. However, improvement is also a matter of who will control the money, what will be done with it, and which program will take the lead in coordination. Everyone agrees about what will work; the need is for cooperation and collaboration so that a proposed solution can work. (This paper contains a 17-page bibliography categorized by newspaper articles, reports, periodicals, journals, limited circulation items, conferences, monographs, and books. It also contains a matrix of good educational practices.) (KC)

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INSTITUTE FOR THE STUDY OF ADULT LITERACY

ON CHANGING EDUCATION

Practically Everybody Agrees on What Works but can that be translated into Largescale Educational Reform?

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ON CHANGING EDUCATION

Practically Everybody Agrees on What Works but can that be translated into Largescale Educational Reform?

The failure of our educational system to turn out students properly equipped with the basic skills has created a problem for the nation's employees and for all of us as citizens. Horror stories of these failures recounted by those affected have become a litany:

In 1987, only 3,600 of some 23,000 applicants for jobs with New York Telephone Company passed the 1987 entrance exams in vocabulary, arithmetic, and problem-solving skills (Lochhead, 1988).

An insurance clerk, mixing up the decimals, paid $2,200 on a $22 settlement (Simpson,1988).

A feed-lot operator misread a label and gave a pen of cattle poison instead of feed (Simpson, 1988).

Forklift operators working for Pillsbury/Green Giant Company in Belvidere, Illinois, couldn't read well enough to fulfill shipping orders (Grimes and Renner, 1987, pp. 4-5).

The Chemical Bank of New York screened out four of five applicants for teller jobs when they failed to fill out job applications properly, and then found only 55 percent of the remainder could pass a 45-minute eighth grade level math test (Bernstein et al., 1987; Nussbaum, 1988b, p. 49).

IBM had to teach workers in a Burlington, Vermont, plant how to do high school algebra before they could run the new computers (Nussbaum, 1988b, p. 49).

Campbell-Mithun Advertising in Minneapolis says the ratio of applicants to hires is 20:1 for secretaries and 10:1 for mail clerks (U. S. Department of Labor et al., 1988, p. 13).

The Motorola company is seeking blue collar workers to take over part of the quality control function, called Statistical Process Control (SPC) from its engineers, but only 20 percent of Motorola applicants can pass a seventh grade English or fifth grade math test (Berney, 1988, p. 27; Bernstein et al., 1987).

Northern Tube Division of AP Parts Manufacturing Company, found that 300 workers had reading and math skills too weak for SPC training when it sought to introduce that quality control system into its Pinconning, Michigan, plant (Berney, 1988, p. 26).

The Toyota plant opened last year outside of Lexington, Kentucky, pledged to hire 98 percent of its new employees from Kentucky. With 60,000 applications for the available 3,000 jobs, 1,200 had been hired by fall 1988 but they were not meeting the company's basic skills requirements (Workforce America Conference, 1988).

Triangle Horseshoe, relocated from Minnesota to Columbia, South Carolina, where it could fill only 400 of 700 job slots for its sophisticated computerized tool and dye production line. One out of five high school graduates could be hired and one in three lasted more than 90 days (Workforce America Conference, 1988).

Ryder Systems, Inc., of Miami, couldn't find qualified employees in New England for its transportation business so had to pay for relocation (Goldstein, 1988, p. 41).

The CEO (Chief Executive Officer) of Prudential Insurance Company reports that 44 percent of the 1987 job applicants could not read at the sixth grade level (National Literacy Honors Symposium, 1988).

A $700 steel sheet was ruined by a Pennsylvania manufacturing employee who couldn't read a ruler (Hull and Sechler, 1987).

One-third of Polaroid's hourly workers have taken classes in reading, writing and problem-solving since 1985 (Perry, 1988, pp. 71-81).

Mutual of New York reports that some 70 percent of its correspondence must be corrected or re-typed (Mikulecky, Erlinger and Meenan, 1987, p. 5).

GE Plastics in Montgomery, Alabama, could hire only three percent of its workforce from that county because of low literacy levels (Workplace Literacy Conference, 1988).

A consortium of New York City banks promised to hire 300 inner-city high school graduates, but found only 100 could meet the entry requirements consisting of eighth grade level reading and math tests (Berlin and Sum, 1988, p. 25).

The Bank of Boston introduced training in the early 80's because its employees lacked basic math and reading skills; some couldn't handle routine clerical jobs (Mazzolini, 1987; Holmes and Green, 1988, p. 3).

Nabisco has had to install basic skills training in plants from Chicago to Philadelphia and Pittsburgh to prepare inadequately educated assembly line workers for automation being introduced into the baking process (Workforce America Conference, 1988; U. S. Department of Labor, 1988, pp. 9 & 10).

In short, basic skills deficits are showing up in the workplace evidenced by a constellation of symptoms. Entry-level workers are losing and/or not getting jobs because they are handling standardized tests and application forms poorly. Those on the job are accident prone or lack a strong work ethic or are weakly motivated. Others can't handle technical training during in-plant improvements as the company pushes for better quality and higher productivity. Finally, the new focus on highly socialized workers who can adjust to change, share ideas, make their own decisions, take responsibility and work as a team, recently coined the "Gold

Collar Worker," spotlights thinking, communications, problem solving and analytic deficits as never before (Levin, 1988, p. D5).

The Research Base

Recent research on literacy levels bears out the consensus view that "literacy skill levels are not adequate to the demands of leadership" in our highly competitive technological global economy (Venezky, Kaestle and Sum, 1987, p. 70).

According to a raft of studies, "young adults do not possess a high level of critical reading skills" (Venezky, Kaestle and Sum, 1987, p. 52). We are neither "careful readers" nor "competent information processors." Our "problem solving skills are weak" and "complex tasks" baffle us (Venezky, Kaestle and Sum, 1987, pp. 28-29). "Only small percentages of children and young adults can reason effectively about what they are reading and writing," charges another study (Applebee, Langer and Mullis, 1987, p. 11).

In another report, Who Reads Best (Applebee et al., 1988), third, seventh and eleventh graders could not adequately explain what the author was saying and why in a simple story about a girl who invites her brother on a bicycle ride. The showing on that and two other simple reading exercises led the authors to conclude "that students in American schools can read with surface understanding, but have difficulty when asked to think more deeply about what they have read, to defend or elaborate upon their ideas, and to communicate them in writing" (Applebee et al., 1988 p. 25).

The Writing Report Card (Applebee et al., 1988) suggests students have trouble with analytic writing, with "providing evidence for their points of view," and with developing a story (p. 9). In short, it concludes from the evidence on writing that "students at all grade levels are deficient in higher-order thinking skills" (p. 11).

When it comes to computation, The Mathematics Report Card (Dossey, Mullis, Lindquist and Chambers, 1988) concludes: "Most students, even at age 17, do not possess the breadth and depth of mathematics proficiency needed for advanced study in secondary school" (p. 10), let alone the math needed to handle

SPC, large-scale information organization and tracking, and ultimately, higher level technology. Computers and calculators are in limited use in classrooms: only 15 percent of third graders and 26 percent of eleventh graders say their math classes have calculators (p. 79) and 47 percent of 13-year-olds and 57 percent of 17-year-olds use computers in math courses (p. 83). According to the science world, mathematical reasoning, problem solving, statistics, probability and discrete math skills will become more critically needed as we move into the 21st century, yet our schools stress rote learning over these higher order skills.

U. S. 14-year-olds ranked fourteenth in a recent seventeen-country study of science achievement (The Business Roundtable, p. 11). The Science Report Card (Mullis and Jenkins, 1988) points out that over half of America's 17-year-olds do not have the "thinking skills and science knowledge" that will allow them "to perform competently jobs that require technical skills or to benefit substantially from specialized on-the-job training." Nor are the skills "adequate for informed participation in the nation's civic affairs," to understand environmental, biological as well as economic issues. Moreover, only seven percent of these 17-year-old students know enough science fundamentals for college-level science study. In fact, in the same study U. S. "advanced science students ranked last in biology, and performed behind students from most countries in chemistry and physics" (Mullis and Jenkins, 1988, p. 6).

Achievement scores in other basic academic subjects are similarly woeful. A recent Gallop Survey on geographic knowledge among nine nations placed American youth, 18 to 24 years, lowest of all youth tested, and U. S. adults in the bottom third behind Sweden, West Germany, Japan, France and Canada ("Americans falter," 1988; Edgeworth, 1988).

More than 8,000 17 year-old students, tested by the National Assessment of Educational Progress (NAEP) in 1986 in the first national assessment of history and literature knowledge, all rated low. Less than a third knew when we fought the civil war; under two-thirds knew what "sputnik" was; and only 42 percent knew about Senator Joe McCarthy's witch hunt. Just over half identified Raisin in the Sun, under 60 percent the Scarlet Letter. Only two-thirds could remember "life, liberty and the pursuit of happiness" as a tenet from the Declaration of Independence. Authors of What Do 17-Year-Olds Know? believe that U. S.

students are being short-changed because "critical thinking requires content, perspective and breadth, precisely the kinds of vicarious experiences that can be gained through the study of history and literature" (Finn and Ravitch, 1987, p. 203). The study of history and literature also give citizens the perspective to understand issues addressed by competing political candidates and the lack of such understanding may account for the poor voter turn-out in recent elections.

In winter 1989, a National Governors Association panel urged new emphasis on languages and international studies, as a means of preventing this country from being "outcompeted in the world market" ("Governors," 1989, p. 14A).

To further complicate the problem, the NAEP study reminds us, our minority populations are far behind in educational attainment scoring. "Black and Hispanic students are well behind white students by grade four, and the difference is not made up even for those who attend college" (Applebee et al., 1987, p. 22). The gap is evident in reading scores, science and math, as well as for tasks requiring more in-depth thinking, problem-solving and communications skills (Mullis and Jenkins, 1988, p. 57) and, additionally, history and literature (Finn and Ravitch, 1987, p. 132).

Sadly, lack of learning begets continued lack of learning, as borne out in Science Report Card:

> ... children and young adults whose parents have more education and those with access to more reading materials in the home read, write and reason more proficiently than those from homes with less-well-educated parents and fewer reading materials . . .(Finn and Ravitch, 1987, p. 25).
>
> Students more proficient in science, too, "were more likely to report home involvement in science projects and activities, access to more types of reading and reference material at home . . . (Finn and Ravitch, 1987, p. 122).

The same was the case for history and literature (Finn and Ravitch, 1987, p. 125). NAEP cites its statistics using a level-of-difficulty scale of 0 to 500, with 305 the mean and 275 to 325 the moderate level:

> This assessment finds that White young adults surpass minority groups beginning at the 200 levels on each of the scales and these differences increase in magnitude at succeeding levels. More than 95 percent of White, 90 percent of Hispanic, and 82 percent of Black young adults are estimated to be at or above the 200 level. However, by the 275 level, the percentages decrease to 78 percent of White and roughly 57 percent Hispanic and 39 percent of Black young adults. By the 350 level, the percentages drop sharply for each group while the magnitude of the differences increases— approximately 25 percent of White, 10 percent of Hispanic, and just under 3 percent of Black young adults are estimated to attain or surpass this level (Kirsch and Jungeblut, N.D., pp. 65-66).

Translated into real-life terms: only one-quarter of all White, ten in 100 Hispanic, and only three out of every 100 Black youths can handle such ordinary tasks as figuring out interest charges from a loan ad, estimating cost based on unit-price labels in the supermarket, interpreting distinctions between two types of employee benefits, reporting what a lengthy newspaper article says, using a time schedule to select the right bus for given arrivals and departures (Kirsch and Jungeblut, N.D., pp. 16-17, 28-29, 36-37). And, while most everybody knows basic everyday science facts, fewer than half the White and roughly 15 percent of all Blacks and Hispanics 17-year-olds have enough applied basic scientific information to identify indicators of an approaching storm or the way to test claims for a new plant food (Mullis and Jenkins, 1988, p. 7, 49).

The Town-Gown Gap

Business—which creates eight out of ten jobs in the U.S. (Kolberg, 1984)—is howling about this turn of educational events. Not only, they say, have schools turned out inferior products needing basic up-grading and retraining but also Fortune reminds us that our one million yearly school dropouts are one-quarter of all high school students, and "most of these dropouts are virtually unemployable" (Perry, 1988). The retired chairman of Procter and Gamble explains that "any job that can be done by an illiterate can and will be done better and cheaper by a machine" ("Youth 2000," 1987, p. 4). Ergo, illiterates are unemployable. A Motorola vice president told a Congressional committee in spring 1988: "We have found to our disappointment that many workers are not prepared to operate the factory of the present, much less of the future" (Berney, 1988, p. 27). The head of the Communications Workers of America/American Telegraph and Telephone

(CWA/ATT&T) Alliance for Employee Growth & Development warns: "A workforce with yesterday's skills is being asked to do tomorrow's work" (National Literacy Honors Symposium, 1988). Fortune reports that two-thirds of 260 companies, banks and utilities in a Conference Board survey listed education as their number one community concern (Perry, 1988, p. 71).

A 1986 Business Roundtable survey of 118 member companies found 38 percent complained of trouble finding well-educated high school graduates, 60 percent found high school graduates ill-prepared for the world of work, and 80 percent attested to problems employing high school graduates who possessed insufficient basic education and preparation for work (The Business Roundtable, p. 11).

A National Alliance of Business (NAB) survey in spring 1988 of 134 representatives of small and large businesses—banks, hospitals, utilities, newspapers, and manufacturers—revealed that the gap is widening between the basic skills that business needs and the qualifications entry-level workers can provide (Holmes and Green, 1988, p. 5). Employers were unanimous that entry-level workers are deficient in reading, writing, math, communications, problem-solving, teamwork, initiative and adaptability.

More recently—in 1989—Fortune Magazine and Allstate Insurance surveyed CEO's of the Fortune 500 industrial and 500 service companies to find that 87 percent "report that their companies are concerned about the problems of the American public education system," 64 percent say the system has "deteriorated in the past ten years" (p. 5), and 77 percent rate the system "fair" or "poor" (p. 4). Moreover, 58 percent argue "it is difficult . . . to hire new employees with good basic education skills" (p. 5), and 46 percent report "poor basic education skills in their workforce" have "reduced" productivity (p. 6).

Lack of work-readiness is costing business big bucks. The Wall Street Journal puts $25 billion a year price tag on it (Simpson, 1987). Xerox president David Kearns estimates the nation's basic skills training bill at $2 billion (Applebee et al., 1987, p. 4). The American Society for Training and Development (ASTD) avers that out of a $30 billion formal (as distinguished from informal on-the-job and in-plant) training budget, business is now providing job preparation for 55 percent

of the workforce and on-the-job skills upgrading for 35 percent, the lion's share going to professionals and high-skilled workers (ASTD, "Measurement," "Technical training, "Organization and strategic role"). The ECS Roundtable on a Quality Workforce warned that "the scale of the effort will be immense" if business is called on to train as well as retrain their employees. "I would suggest," said one participant, in awe of the staggering training costs, "that corporations face a burden in terms of training dollars that's much bigger than we ever dreamed it would be" (p. 11). This may well be so if testimony from American Express Company President, Louis Gerstner, is accurate. He says his company spends over $10 million "to teach employees to do their jobs competently," and that "AT&T says its spends $6 million a year to educate 14,000 employees in basic reading and math" (Gerstner, 1989, p. 11).

The clamor on the business side may be loud and getting louder, but few educators interviewed in the National Alliance of Business study acknowledged that the gaps are as severe as business suggests, leaving an impression that the corporate ruckus doesn't carry across the fence.

This perceived gap in understanding between education and business recalls an earlier examination, the 1982 Henry and Raymond study, entitled Basic Skills in the US Workforce. Here, too, a "significant gap" was found between business and school system perceptions:

> The majority of companies surveyed identified basic skill deficiency problems in the majority of job categories listed. Over 75 percent of the school systems, however, assessed the majority of graduates entering the work force as 'adequately prepared' for employment (Center for Public Resources, 1982, p. ii).

Moreover business and unions in that survey "identified widespread deficiencies in science and math" while one-quarter of the school system responders "listed science as of little importance" (Center for Public Resources, 1982, p. iii).

Even with the increase in business-education partnerships over the past five years, the continuing gap in understanding between education and business would appear to be daunting. Assistant Secretary of Labor, Bob Jones, says:

"Education doesn't have clue one of the fact that the environment kids will walk into (in the work world) values strong basic skills and lifelong learning" (ASTD-DOL Symposium, 1988).

A Marriott Corporation officials describes an "entry-level hiring crisis" and a Bank of America vice president avows that half of all banking employees have outdated skills as the industry shifts from manual to automatic systems . . . (BNA #186, 9/28/87) Xerox CEO Kearns accepts that "remedial training in the workplace is now part of the cost of doing business" . . . (Green and Leopold, 1987).

The chairman of Eastman Kodak takes a darker view:

> As a manufacturer of high-technology goods, I am alarmed that Kodak will be unable to find adequately educated and trained workers for our plants in the years ahead . . . In Rochester, New York, only 2 percent of the jobs that need to be filled can be described as unskilled, yet anywhere from 10 to 15 percent of the workforce is below high school equivalency (Chandler, 1989, p. F3).

The training director of Travelers Insurance Company in Hartford asserts:

> For 20 years, my company has had a minority training program primarily for black and Puerto Rican women. For the past five years, we have been seeing a decrease in the level of preparedness of applicants. Now we have to test before we can accept people; because preparedness is so very much lower than it was, we can no longer give applicants the opportunity to learn hands-on (Holmes and Green, 1988, p. 3).

But while big business –- Polaroid, Mazda, Nabisco, Motorola, UAW/GM, UAW/Ford, UAW/Chrysler and others — are able to cope by providing the needed training, small business has neither the funds nor the staff to do so.

The head of Pennsylvania's Small Manufacturers Council — charging there has been a 25-year downward sweep in educational standards —identifies the number one problem as basic attitude and work habits while basic skills follow as close second. He blames the educators:

> Quality control is the watchword in industry while education produces defective human products, a sub-literate workforce. It costs three to

> five times as much to fix a product as to do it right in the first place. Successful individual programs are like applying a tourniquet to a bleeder. A sub-literate work force has to be retrained — and small business does not have the resources. Society will have to pay. At the very least, small businesses will pay for training via lower wages or fewer hires. So those who need the training the most will be the most adversely affected (Adult Literacy & Technology Conference, 1988; Workplace Literacy Conference, 1988).

Such a statement cannot be ignored given that small business—defined as 100 or fewer workers—constitutes 99 percent of U.S. business, supplying 56 percent of all private sector jobs (U. S. Small Business Administration, 1987, p. 5). The Small Business Administration (SBA) estimates only 20 percent of small business employees get job training, most of them paying for it themselves. What's more, most of these are high school graduates, not the 20 percent who have dropped out (Berney, 1988, p. 30). Governor Bill Clinton of Arkansas sees the need for government intervention to find a way for small employers to let employees get literacy help which Clinton hopes the States would fund (National Literacy Honors Symposium, 1988).

Lest we think paying for training is a problem for small business alone, listen to a participant in the Education Commission of the States (ECS)/ Sears Roundtable on Workforce Literacy:

> Don't be fooled for a minute . . . Though his company willingly accepts responsibility for training workers, the costs of training are passed along to consumers. Each time a company must cover old ground, teach its employees skills they should have learned in school, the consumer pays twice (p. 10).

And another participant:

> In our industry, the standards for people coming into the organization and for those who spend many years in it are going to continue to rise. This fact has to be reflected in the caliber of students coming out of high schools. We cannot afford to continue to screen 20 people to find one person who meets our standards (p. 8).

In fact, reports done for the National Association of Broadcasters Productivity Council say "the schools and the government have let society down in their mission to produce a literate graduating body" (Omega Group, 1989, p. 10). Business is

unwilling to bankroll solving poverty problems without government incentives. Texas Instrument manager of university relations says the company's $38 million training budget goes for company training and university education, not K-12 because there's no return from remediating lower education. He adds:

> If the infrastructure cannot produce the educated workforce required by industry it may be best that industry use its funds to explore other alternatives ("Myth #10," 1989, p. 5).

It looks like business is beginning to do exactly that. The Business Roundtable and CED (the Committee for Economic Development) have taken on education reform as a "major concern" (The Business Roundtable, p. 17), and are calling for fundamental change. Now the National Alliance for Business, going far beyond its earlier push for partnerships, has issued "A Blueprint for Business on Restructuring Education." In that, NAB calls on business "to forge . . . new ventures for systematically changing education" by providing leadership, organizational planning and development, advocacy, research and development, and new technology to educators, social service agencies, parents and the community in reshaping educational management, staffing, curriculum, assessment and, most of all, performance and accountability.

Many educators don't really hear the implied threat from such statements. Instead they rail against business for not knowing education jargon and for emphasizing workforce education over general education. A professor from a well-known mid-western state university said at a recent conference:

> Many of the people who are in business and industry do not even know what literacy is. They don't know the difference between word attack literacy and functional literacy, much less cultural literacy. As for training programs, the people who do the training and development in industries know very little about methods of teaching, methods of learning, learning styles, adapting teaching materials and techniques, speed of learning, any of those things, to accommodate for learning disabled adults (Conference on Adults with Special Learning Needs, 1988).

Teachers of basic skills in a northwestern industrial city charge that the city's businesses are unwilling to recognize that they have a problem, preferring to fire workers who can't make the grade because of basic skills deficiencies rather than

to pay for retraining (Adult Literacy and Technology Conference, 1988). A commentator at the Literacy Network Forum, in June 1989, intoned:

> The workplace is only one context in which people can acquire literacy; other places are in homes, neighborhoods, communities. It's a little early for the explosion in workplace literacy programs.

A well-known education association monthly comments:

> [T]he conclusion that workplace training provides all the skills for two out of three jobs leaves us breathless and a little worried . . . The worker who learns the specific computer system of a company so that reports can be completed, and the person who learns a new procedure in a factory being automated are learning specific skills, but they are by no means the only skills needed for many of the jobs. If our educational system has not given a computer programmer the analytical skills needed to problem-solve a program, or a writer the investigative skills needed to complete a story, these workers will not be productive at their posts. To say that workplace training provides all the skills necessary for two out of three jobs denies the importance of strong k-12 and post-secondary curricula and negates the findings of reports such as the 1982 A Nation At Risk (Melton, 1987).

And finally from a northern New England university professor:

> In enhancing our educational programs for adults to address the critical question of "how," we must not forget the "why." Too often we become entrapped in the need to sell our programs on the basis of how concrete the results will be from taking a course. While economic realities often dictate this we should not forget that there is a higher vision for why we educators do what we do. Our ultimate aim in education should be to help develop people who are literate, thoughtful, and able to learn new skills as needed. Being able to think critically and to use skills in a new context is best achieved through a balanced educating of minds (Levesque, 1988).

The counterweight to academic theory is the pragmatic business view:

> [We] foresee continuing change in the very nature of their various enterprises... What constitutes 'literacy' in the workplace is not the same now as it was, say, 20 years ago, nor what it will be 20 years from now. One of the things that make the notion of workplace literacy more complicated than it looks on the surface is that there is no 'there'

> for us to reach . . . [But] changes that are very clear to business people are not ones that schools seem to have recognized so far (Holmes and Green, 1988, p. 8).

In fact, alleges business, "our employees, at all levels of the organization, have to develop a mind set that points them toward continual learning, throughout their entire careers" (Holmes and Green, 1988, p. 8). Instead, "our education system is set up to create a static level of skill . . . We don't have a system that works on the assumption that schools must change continuously and that effort beyond school must be anticipated" (Holmes and Green, 1988, p. 9).

While the debate sharpens and illuminates differences, many of these commentaries beg the more significant national concern: analytic, problem-solving, critical thinking skills promote a mind set for learning that continues throughout a lifetime. This comes from a variety of educational and training experiences, and environment that values, employs and rewards the honing, refining and upgrading of knowledge and skills. Such individual achievement and the motivation to reach to higher accomplishment is embedded in sound basic skills competence learned early and practiced for long. It is a grave national shortcoming that neither basic competence nor higher order competence is being delivered on any systematic or substantial scale in the U.S. today.

The Workplace-Workforce Gap

The trend lines drawn by demographers and economists all point to a slower-growing, older, more female, more minority and more disadvantaged workforce in the future. Their awesomely consistent projections foresee a workforce "teaming with women, minorities, and the elderly," as Industry Week put it (Goldstein, 1988, p. 41). This change in the workforce complexion will combine by the year 2000 with a substantial rise in workplace as well as civic and other education and skills requirements (Holmes and Green, 1988, p. 95). Because the baby boom generation is bearing half the kids its parents had, 16-to-24-year-olds entering the workforce will drop 20 percent by 1995—from 36.2 to 28.9 million (Youth and America's Future, 1988b, p. 29).

In this future workforce non-whites and immigrants will constitute 42 percent of the new workers added to the labor force between 1985 and 2000 (Holmes and Green, 1988, p. 95). Add women to the equation and the three minority categories promise to make up more than five-sixths of the net addition to the workforce between now and the year 2000, compared with about half today (Holmes and Green, 1988, p. 97).

Yet these are the very segments of the population whose basic skills are the poorest: "On virtually every major standardized test, minorities and the poor are concentrated in the bottom fifth of the test score distribution" (Berlin and Sum, pp. 24, 29).

Yet the fastest-growing job sectors, according to the Hudson Institute, will be the professional, technical, managerial, sales, and service areas—where jobs require higher skills. Meanwhile the traditional jobs of the low literate—miners, machinists, handworkers, laborers, farmers—will grow much more slowly and, in fact, some will decline (Holmes and Green, 1988, p. 97). The good factory and farming jobs—unskilled jobs that were plentiful in the forties, fifties, and even the sixties and seventies just aren't there any more. In a word, "the economy of the future will not produce or sustain high-wage, low-skill jobs" like the $12 an hour unskilled janitor jobs in auto plants as recently as the 1970's (Holmes and Green, 1988, p. 103).

In fact, business restructuring of the eighties has brought pay growth down, trimmed the workforce and improved productivity with an eye to making American products more competitive in world markets (Nasar, 1988, p. 48). But the emphasis has been on zero defects, on improving product quality and maintaining our national lead in high tech and in developing new products—all requiring workers to "work smarter" (Knowlton, 1988, p. 40).

The Hudson Institute maintains that more than half the new jobs created between 1984 and 2000 will require post-high school education—a median of 13.5 years of schooling compared to 12.8 for today's workers, and one-third will require a college degree as compared to 22 percent today (Holmes and Green, 1988, p. 97). The Fortune Magazine-Allstate survey (1989) contends that 35 percent of the workforce surveyed "has some college education" and over the next decade, "on

average, 45 percent of their workforce will need to have some college education" (p. 6). Meanwhile, Roueche and Armes estimate that over 50 percent of entering community college students read below the eighth-grade level and 20 to 35 percent at the fourth grade or below (Grede and Friedlander, 1981, p. 2). And the number of college age Americans will drop to 18 percent by 1995 producing fewer highly educated employees (Bernstein, Anderson and Zellner, 1987). While one in four workers has a college degree today (Hodgkinson, 1985, p. 11), one in five of today's college students will graduate to work in a job that doesn't require a college education (Hodgkinson, 1985, p. 8), and this number will grow (Hodgkinson, 1985, p. 10). Hodgkinson contends that low-skill service jobs—janitors, cashiers, fast food and other food service workers, and security guards—are increasing rapidly and so will provide jobs for the low-skilled because they are unlikely to automate.

With this caveat alone, the futurists tell us that—whether we talk about the service economy of the future or the manufacturing sector where 28 million workers, one-quarter of the workforce, are currently employed—the need is for skilled workers who can keep up with new product and process changes and participate in the development of process technologies, "productivity-enhancing machinery and better organized production and marketing" (Heinz, 1988, p. 9).

The Hudson Institute warns our economy must grow at an annual rate of three percent to maintain competitiveness—but that we require 25 million workers to improve their skills an average of one point on a Labor Department scale that measures jobs by level of difficulty. "For some workers," reports Nations Business, that "means progressing from the level of understanding comic books to grasping complex maintenance instructions" (Berney, 1988, p. 27).

These data underscore the clear direction that our workforce is taking. In fact, we've moved far enough along that road to have passed several milestones worth noting. While unemployment for the educated—professionals, administrators and managers—now mostly white males—is down to two to four percent, teenage unemployment for minorities is double digit (Bernstein et al.,1987): 16 percent for white 16-19 year-olds, but 23.7 percent for all Hispanics and 42.7 percent for all blacks in 1985 (Heinz, 1988, p. 8). One reason for this is that new jobs are in the suburbs, while the employment-seeking minorities—57 percent of blacks and 49 percent of Hispanics—are in the inner city (Bernstein et al., 1987). In Detroit, inner-

city teenage unemployment was 52 percent in 1987, while $4-an-hour jobs at suburban burger joints went begging (Bernstein et al., 1987).

Our nation today contains 4.3 million dropouts, ages 16 to 24, about 13 to 14 percent of that age group—as compared to 20 percent in the sixties. But the percentage decrease in national dropout statistics over the past few decades must be seen against inner-city dropout rates which have risen to shockingly high ranges—48 to 60 percent in Boston, Chicago, Los Angeles, and Detroit. Some studies have found that dropout rates increase in direct proportion to the level of poverty and disadvantage (Barber and McClellan, 1987, p. 257). Many dropouts do not participate in the job market at all so they are not counted in labor force statistics. Of those dropouts who do look for jobs and so are counted in labor force statistics, one in four is unemployed. In October 1986, among young men who last attended high school in 1986, some 70 percent of the graduates, but less than 50 percent of the dropouts, were employed.

Chicago's 43 percent dropout rate in 1982 cost the city, on a per-dropout basis, $26,000 in lost tax revenues, $4,000 in welfare payments and $6,000 in crime-related costs, totaling $451 million for each class cohort ("Facts and Findings," 1986, p. 2). One estimate is that the nation's million dropouts from the high school class of 1981 alone will lose $288 billion in personal lifetime earnings and a further $68.4 billion will be lost in taxes (Moawad and Alloway, 1987, p. 24). The Business Roundtable says "dropouts cost the economy an estimated $147 billion" in 1986 (The Business Roundtable, p. 4). And ASTD points out that the "earning differences between high school graduates and dropouts increased from 30 percent to 60 percent" between 1960 and 1984 ("Workplace Basics," N.D., p. 5).

A Vice President of Manufacturers Hanover Trust of New York sums up: "Instead of drawing from the 60th to 80th percentile in high school achievement levels, we're now drawing from the 40th . . . While all this is happening, entry-level jobs are growing more complex and demanding" (Simpson, 1987). This trend that requires digging deeper into the barrel for new workforce recruits, would seem to signal an end to concerns about "creaming." ASTD's Tony Carnevale calls that "a happy problem: people who used to be warehoused are needed" so if we can do it right the first time we can cut the very high costs of second chance programs—Jobs Corp, for example costs $15,000 per year per trainee (ASTD-DOL Symposium,

1988). The fact, of course, is that 80 percent of the workforce of the year 2000 is already on the job, so we have to make do with what we've got (American Association of State Colleges and Universities, 1986, p. 65). To solve this, ASTD suggests that "Academic and employee institutions must stop catering to the development and use of white-collar and technical elites" and "attend to the non-college bound and the non-supervisory employee" (Carnevale, Gainer and Meltzer, N.D., p. 7).

A NEW DIRECTION FOR WORK AND LEARNING

Columbia University's National Center on Education and Employment under Director Sue Berryman, describes our current business scene as a shift from mass production to "flexible production" and explains by citing changes in traditional banking, insurance and textile jobs. A claims adjustor with a computer today alone holds down five of the traditional insurance jobs—messenger, file clerk, customer assistance clerk, claims adjustor and policy writer—requiring greater skills than any of the five previously needed plus the ability to understand, manipulate and interrelate "multiple arrays of information." At least two years of college is required for such work, whereas high school graduates and dropouts used to fill the five routine jobs (Berryman, "Breaking Out," p. 3). The bank teller holds a routine job today, while bank clerk-typists are now college graduates who analyze customer needs and available bank services and then "produce a match—in other words, make a sale" (p. 4). Even titles are blurred: ASTD suggests that the bank teller, as the point of customer contact, has evolved into "the financial services portfolio consultant" (Carnevale et al., N.D., p. 3).

Textile-machine operators, in the past robot-like tenders of tireless clacking machines, now require more sophisticated skills, to operate electronic components and computer-driven looms. When a robot replaces a machinist tool and die maker, you get a reduced workforce because the remaining technician's job replaces the laborer, the materials handler, the operator/assembler, and the maintenance person. But this technician requires higher level reading, writing, math as well as management skills (Carnevale et al., N.D., p. 3). It's not only on the assembly line that job skill requirements are going up. Technicians also need higher order skills, along with the ability to manipulate symbols in order to understand the manufacturers' maintenance diagrams and manuals. Preventing

costly down-time requires team-work and understanding the whole production process, not just one's own job as in earlier days (Carnevale et al., N.D., p. 5). So

> while many jobs used to be based on repetition of a particular set of well defined tasks, jobs now are more likely to demand varied and unpredictable responses to a variety of stimuli and information. Employment now involves interaction in constantly changing ways with production technology (Carnevale et al., N.D., pp. 6-7).

So demanding has the needs of the workplace become, as a result of the drive for higher productivity and competitiveness and the need to keep up with technical change, that ASTD was tapped by the U. S. Labor Department to study those needs in detail and suggest training strategies. The study came up with a seven-tier listing of "the skills employers want." From the foundation to the apex, they are: learning to learn, the three R's, communication (listening and speaking), creative thinking and problem-solving, self-esteem/motivation/personal and career development, interpersonal/negotiation/teamwork, organizational effectiveness/leadership (Carnevale et al., N.D., p. 9).

How do these skill requirements differ from those that are routinely taught college-bound students? They don't! In fact, in the early eighties, 200 business and education leaders, participating in College Board's Business-Education Dialogues, affirmed the relevance for job-bound high school graduates of six "Basic Academic Competencies": reading, writing, speaking and listening, mathematics, reasoning and studying. These competencies were the very ones that the College Board experts had listed in a 1981 study as academic preparation for college. "These competencies," said the business people, "are as necessary for success in the world of work as they are for success in college" (The College Board, 1983, p. 1). The President of Xavier University knows this: "You can't separate kids going to work from those going to college. They need the same thing" (Workforce America Conference, 1988). The Columbia Center researchers suggest that our challenge today is to " make thinking and problem-solving a regular part of . . . mass education as they are of elite education" (Berryman, "Breaking Out," p. 8). The ASTD agrees:

> In a comparison among countries, the more educated and trained half of the American workforce competes well with the white-collar and

> technical elites of its economic rivals. But the other half of the workforce is not as well prepared, and this is where the U.S. is losing the competitive race (Carnevale et al., N.D., p. 7).

Albany State University Professor Judith Langer says no wonder—NAEP performance reports come as "no surprise":

> . . . If schools wish to prepare students to participate fully in the adult community, they need to focus on the ways of thinking that are involved in the many uses of literacy by people within society. . . When the literacy of the classroom and the literacy needed in society differ markedly, we need to ask serious questions about the goals of schooling. The current era, for example, requires that students acquire the kinds of critical thinking skills that are needed to use the communications devices and technologies we meet on a daily bases in our everyday living and in entry level jobs . . . Schools . . . need to reflect these societal shifts by training students in the more flexible thinking skills they will need for entry into todays job market . . . (Langer, 1989, pp. 1, 2).

By way of explanation Professor Langer says students are "engaging in literate thinking," whether or not they can read or write if they "discuss the contents and implications" of a social studies textbook just read or television news report just seen. But it is not "culturally useful literate behavior," if the students "complete end-of-chapter questions by locating information in the text and copying the information . . . " She concludes:

> It is the culturally useful way of thinking, not the act of reading or writing, that is most important in the development of literacy (Langer, 1989, p. 2).

Echoing this belief that "intelligence and expertise (come from) interaction with the environment and not isolation from it," Columbia researchers are "challenging our traditional distinctions between 'head' and 'hand,' academic and vocational education, education and training, between "school-based and work-based learning" ("Breaking Out," p. 8). These academic researchers suggest a "redirection," not only of elementary and secondary education but also of "military, corporate and public training programs." They suggest that the learning enterprise has got to begin to focus on "forms of thinking and learning that share more of the features of successful out-of-school functioning" (Berryman, "Breaking Out," p. 8).

The differences between school and job, home or other non-school learning have been detailed by members of the University of Pittsburgh Learning Research and Development Center. They see four major distinctions:

1) In school, learning, performance and success are individual; at work, home and leisure, performance and success come from teamwork, from functioning within a group or a social system.

2) School values "pure thought," independent and abstract. "In contrast, most mental activities outside school are engaged intimately with tools, and the resultant cognitive activity is shaped by and dependent upon the kinds of tools available" (Resnick, 1987, p. 13). Note the widespread use of tables, calculators, and computers in real world statistical and financial endeavors.

3) In the real world, people reason things out and then act on their conclusions. They figure things out by thinking about, or "mentally manipulating," actual objects and events. In school, on the other hand, they use symbols. "(I)ndeed, connections to the events and objects symbolized are often lost" (Resnick, 1987, p. 7). The classic study in this area was done by Sylvia Scribner who discovered that dairy workers get accurate math answers by using their "feel" of case size to assemble milk orders, even though they don't know the arithmetic process (Scribner, 1988).

4) Of the generalized learning and theoretical principles taught in schools, the so-called transferable skills, "very little can be transported directly from school to out-of-school use," because, the argument continues, "(t)o be truly skillful outside school people must develop situation-specific forms of competence" (Resnick, 1987, p. 15). But "situation-specific learning by itself is very limiting" because when the situation changes even very slightly, unschooled individuals can't adapt whereas educated people seem to be able to improvise a new response to the new situation. Even so, the research tells us, educated folk "rarely use the supposedly general algorithms taught in school" to do this (Resnick, 1987, p. 16).

All of this suggests, first, that differences between school performance of at-risk and not-at-risk learners are not in how they learn but in their "willingness to tolerate or make some sense out of a school-based or school-like experience that is relatively isolated from non-school experience." And, second, these differences in turn may also reflect differences in their vision of where they will fit in an adult

world (Berryman, "The economy," p. 10). The Grant Foundation Commission sums it up:

> Learning takes place when learners regard what one needs to know as relevant to their lives; when they feel that their teachers . . . are committed to their . . . success; when the institutional environment allows for differences in learning methods and styles . . . Most schools place greatest stress in their pedagogy on the development of logical-mathematical intelligence and tend to ignore a series of equally valid intelligences: linguistic, musical, spatial, bodily-kinesthetic, and others. . . [So] the commission endorses a mixture of abstract and experiential learning opportunities, a combination of conceptual study with concrete applications and practical problem-solving (pp. 128-9).

If these assumptions are valid, what should schooling do? NAEP suggests:

> The educational system in this country needs to extend its focus from the teaching and learning of skills and content to include an emphasis on the purposeful use of skills and knowledge (Applebee et al., 1989, p. 6).

In other words, today

> students are expected to be capable of using knowledge for purposes that require them to go beyond reciting facts and displaying the routines they have been taught . . .To fulfill these new expectations, students . . . need to engage in activities that require them to apply, extend, and evaluate what they are learning and to relate new learning to what they already know (Applebee et al., 1989, p. 30).

Pittsburgh researchers suggest that we need "more effective forms of vocational and professional preparation than now exist . . . forms more closely linked to job performance than those now customary" (Resnick, 1987, p.16).

As the Grant Foundation Commission suggests, schooling must:

> combine hands-on work experience with mastery of academic, conceptual materials [so that it can serve] the kind of person who wants to know how to apply geometry before and while learning the first theorem, or to overhaul a carburetor and valves before and while learning the theories of combustion and energy conversion—[who] is often turned off by an educational system that almost uniformly insists

that classroom-taught abstraction and theory must precede application

So "purposeful and effective learning" must include clinical work or internships, interaction with tools and materials, apprenticeship or at least work simulation, tutoring, coaching and mentorships, case-based learning and teaching, work-study, community service, and on-the-job-training— the stuff of the real world. It can take place, not only in classrooms, libraries and laboratories, but also "the workplace, in public and non-profit agencies, museums and cultural institutions, the media, youth agencies and community services, field studies and workshops in the out-of-doors, and community-based organizations in the inner city" (Youth and America's Future, 1988b, p. 129).

There is a broadly enabling role schooling can play. It must teach people to function when there is a breakdown, when routine is inadequate, that is, to be "good adaptive learners" (Resnick, 1987, p. 18). Schooling can also prepare people to be adaptive to the various settings they may encounter over the course of their working lives. "Efforts to play this enabling function are likely to result in new forms of schooling that are also our best hope of preparing the next generation to participate knowledgeably and effectively in the civic functions of a technologically complex democratic society" (Resnick, 1987, p. 16). Once schooling attains these objectives, it can teach "reasoning and reflection" and only then pass on our "shared cultural knowledge" so that it fulfills a true civic function (Resnick, 1987, p. 19).

MacArthur Foundation's Peter Gerber suggests there are many literacies—scientific, cultural, visual, and so on. But the "purpose to literacy goes beyond the acquisition of skill to allow people to understand and value what is lasting in our society," that is, "the character of our nation." Schooling must connect learning to life. Literacy is a "collection of things that hold our nation together." schooling is larger than a list of skills. It is what makes "everyone feel a connectedness to our nation" (National Literacy Honors Symposium, 1988).

With education and business seemingly at loggerheads on educational failings and successes—and higher education proposing new goals for literate citizens and workers, the assumption could easily be made that there is little, if any,

agreement on the how-to's of educational practice. But such is not the case. Instead, there is surprising unanimity on what constitutes good educational practice between eleven education and training delivery systems surveyed. In the section that follows and in Appendix A, the center-piece of this monograph, discussion will center on the educational practices that are universally accepted as "exemplary" by educators and trainers alike today.

Twenty-two Good Educational Practices

So with the Pittsburgh and Columbia research guidelines to good practice in mind along with the Grant Foundation Commission and other recommendations, we turn now to what the practitioners say. A look at "how to" or good practice guides in eleven educational systems—from kindergarten to twelfth grade to vocational education and on to higher education, from proprietary, employment and employer- and union-sponsored training to second-chance programs and adult education—produces a singularly consistent set of strategies or principles for learning. These are not far afield from the findings we have already discussed.

The fact is that good practice is known and it transcends narrow turfs. Second chance educational programmers know it: a recent drop-out study was entitled, "Enough is Known for Action." Big business knows it: Recently-published CED (Committee for Economic Development) and ASTD studies point out exemplary programs and insist we know how to develop them and what goes into them. "Good practice is out there," said ASTD vice president Tony Carnevale at a recent conference, but it is not being practiced much or by many. Neither educators, nor corporate trainers, nor human resource developers are utilizing the best practices, he maintains (ASTD - DOL Symposium, 1988). Grant Foundation Commission director Sam Halperin echoes this with respect to second chance programs: "Why are the second chance programs imitating bad school educational techniques?" (Workforce America Conference, 1988). And school administrators know good practice, too: witness the "What Works" series recently out of the U. S. Department of Education and other exemplary program information now available.

Union literature reminds us that good adult programming, even at the worksites, empowers the learner:

> Our students not only are learning basic and advanced skills of reading, writing, and math, and science and history, but participate actively in developing curriculum ideas. They write oral histories of their lives, their cultural backgrounds, their union experience, their lives in the shop . . . . Students describe how they are beginning to speak up at union meetings, how they now can talk to their boss and the landlord and the doctor, how the classes give them a greater feeling of self-confidence, how proud their families are of their achievement. The program is a labor of love for our union and we are committed to expand it ("Education classes," 1987, p. 5).

What are these convergent strategies and practices of teachers and trainers alike? What is the sina qua non of good teaching and learning that all agree on? Appendix A contains a matrix, listing these practices side-by-side, using the jargon of each of the systems investigated. Note that these practices are not necessarily the norm for all programs in these delivery systems, but rather the ideal to which good practitioners aspire.

Looking across columns, here are good practices common to all systems:

First for process-type practices:

(1) **Write clear, realistic, measurable goals that flow from both learner and societal or institutional expectations.** Students must, of course, focus on general purposes: what they want to do with literacy or reading or numeracy, that is read the Bible, vote, pass the GED, find a job, read to their children. While these are personal goals, they center on institutions—on the school, the college, the teacher, the church, the family — and learning goals and activities are derived from institutional goals. Learner progress—or the process of learning the subject-matter or material, doing the activities, meeting the goals—should be self-directed, self-focused, individualized. But goal-setting flows from purposes that are institutional.

(2) **Formulate an individual diagnostic and prescriptive learning plan** that will take the learner from the goals to the expected outcome, the required level of competence of learning. Some call this an individual education plan, others an individual employability plan or IEP.

(3) **Provide for evaluation and assessment** with pre- and post-testing to determine where the learner stands after training and whether institutional and

learner goals were met. This is normally done via standardized tests that measure a student against a national norm. Ergo, they are norm-referenced. Hand in hand with this, of course, is the need to guarantee privacy in workplace and other educational programs.

(4) **Practice mastery learning, or mastery testing** in which progress is "bench-marked" at every step against specified learning goals. No bell-shaped curve is needed for true student learning. The tasks tested and mastered are those studied, and the measure is mastery: can the learner accomplish the task or can he not; does he know the material or does he not? These tests are criterion-referenced, meaning that they measure what the student knows or can do from the materials and/or methods the student has just studied and practiced. Ray Mabus, the Governor of Mississippi, refers to this as "education achieved, not time served" (Workforce America Conference, 1988), while Oregon lumber company owner Bill Gregory bluntly emphasizes: "We need to teach these guys how to grade lumber, not assess them" (Workforce America Conference, 1988).

Next techniques:

(5) **Feed-back must be frequent** because learners need to see immediate progress or pay-off. One way to assure this is to present material in small units—modules—and test for mastery at the end of each unit or module.

(6) **Time-on-task**: learners must practice until the skill is mastered. Some call this providing intensity of study or training. We must track students, track daily attendance, track mastery, track learning. Note, for example, that, according to the Science Report Card, time spent on science teaching is one to two hours a week at the third grade and three hours or less per week at grades seven to eleven for close to half the teachers and only five percent of third graders and 14 percent of seventh and eleventh grade teachers spend more than five hours a week on science (Mullis and Jenkins, 1988; pp. 66, 71). No wonder our science and math record is so bad.

Worse, the average elementary school child, according to the US Department of Education, spends seven to eight minutes a day reading silently, and half our fifth graders read for only four minutes a day at home. Their average stint in front of the television tube is 130 minutes a day (U. S. Department of

Education, 1986, p. 11). The 1985 Report of the Commission on Reading says, "the amount of reading done by students out of school is consistently related to gains in reading achievement" (Ravitch and Finn, 1987, pp. 236).

Former Education Secretary William Bennett sums up: "If you don't study it, you can't do it" (Bennett, 1988). NAEP reports: "Across the subject areas examined, higher academic proficiency is associated with more course work . . . and more class time spent on learning rather than diversionary activities" (Applebee, Langer, and Mullis, 1989, p. 31).

(7) **Highlight the positive**: build unconditional self-esteem and motivation via positive reinforcement along with frequent incentives and rewards. ASTD says, "An individual's effectiveness in the workplace can be linked directly to positive self-esteem and successful personal management" (ASTD - DOL Symposium, 1988).

People practices:

(8) **Teaching should be one-on-one or in small groups**. A maximum ration of twelve to one—and teacher aids or paraprofessionals should be used to spread the teaching load. Socrates believed teaching was best accomplished by a teacher at one end of a log conversing with a student sitting at the other end. More recently, psychologist Abe Maslow determined that the optimal number for a group to function dynamically is seven to eight. Note recent findings that pupil-teacher ration is a "much better" predictor of pupil retention in a state than teacher salary of per pupil expenditure (Hodgkinson, 1983, p. 11). Perhaps high teacher-pupil ratios account for some of our K-12 school failings.

(9) **Peer learning and/or peer tutoring** is also effective. One researcher suggests that "trainees . . . sometimes worked cooperatively in both study and job performance and developed social networks as a result," an impetus to teamwork (Sticht, 1987, p. 65).

(10) **Faculty must be supportive**. They must "care for the students and then care more," in the words of a NATTS (National Association of Trade and Technical Services) leader. They must be counselors, monitors, facilitators, managers. Corporate trainer Lori Strumpf, the director of the Center for Remedial

Design in Washington, D.C., says, "we need a different kind of teacher" (Strumpf, 1988). Harold Hodgkinson (1985) agreed, showing that a state survey recommended that "a more personal and caring attitude on the part of all staff" would best assist potential dropouts (p. 12).

(11) **Family and/or community involvement** are needed to provide support and motivation.

What about physical teaching props:

(12) **Employ a variety of media and materials**, including actual or real world items like almanacs, auto manuals and autobiographies; tide charts, tax tables and thermometers; mice, microscopes, and musical instruments, and try to provide real-life settings like laboratories.

(13) **Use technology**—computers and calculators, video and good software—to teach higher order skills, for drill and to identify conceptual errors and, possibly, to correct them. The New York City Literacy Assistance Center suggests that the use of calculators "allows the students to proceed directly in real life problems" and also "enhances the learning of problem-solving skills" because it releases class time for the study of math processes rather than mechanics, thereby improving motivation and decreasing "anxiety associated with math computation" (Literacy Assistance Center, 1988). The National Council of Teachers of Math recently issued standards calling for the use of technology, especially computers and calculators, to be available to all students at all times: "Calculators and computers for users of mathematics, like word processors for writers, are tools that simplify, but do not accomplish, the work at hand" (Rothman, 1989, p. 4).

Many adult educators say "technology must be part of the solution" of adult illiteracy "because it promises greater economics of scale and the benefits of self-paced instruction." It adds, "computer systems allow teachers to devote more, not less, time to the needs of individual learners . . . (and) more rapid learning gains can be achieved . . . A final problem is that we have yet to explore what contributions technologies other than computers can make to basic skills education" (Chisman,1989, pp. 11-12).

(14) **experiential,** that is, rooted in the learner's own experience, background, knowledge, and interest

(15) **individualized** to fit the particular learner's own needs and skills

(16) **self-paced**, setting no arbitrary time limits

(17) **self-directed**, involving learners in their own learning

(18) **competency-based**, focused on tasks not time

(19) **activity-based** to accommodate "hand" as well as "head," including laboratory work, outside projects, research reports and interviews.

NAEP describes this:

> Such activities might include, but not be limited to the whole class discussions, workbooks and dittos that prevail today. Discussion teams, cooperative work groups, individual learning logs, computer networking and other activities that engage students as active learners will need to be added, and may even predominate (Applebee et al. 1989; p. 41).

(20) **flexible**, so it can fit the learner's experiences, level of needs and skill, time and place constraints

(21) **integrated** so that basic skills training comes as an integral part of the subject matter, so that the skills are learned as processes of doing content-laden activities. NAEP spells this out:

> In many cases, [the science as well as other subject area curricula are] treated as a collection of discrete content areas in which teachers move from one topic to another in lockstep fashion. As a result, lessons are often developed in isolation from one another and fail to help students relate their new learning to what they already know. There have been many calls for a more integral approach to content learning. . . . (Applebee et al. 1989, p. 33).

(22) **contextual**, so that the materials and media, the subject-matter and the learning experience are embedded in and taken from the function that this skill is going to be used for, whether that is the job, the home, the voting booth, or the church. These also need to be portable because situations can change.

Former Education Secretary Bennett can summarize for us. "We know how to do it." (We need) "strong competent principals, dedicated staff, parental involvement, no drugs and no discipline problems, good behavior and good habits . . . accountability or rewards and penalties for good and bad teaching, stronger curricula" (Workforce America Conference, 1988). Grant Commission head Halperin adds: "Programs that work, work with kids, to draw them out, to build all their skills, to build pride in their race and ethnic heritage, to respect their intelligence and integrity." Because, he says, "kids need more power over their own environment; protection against disasters like crime, drugs and abuse; meaningful and important work, and multiple pathways to success," that is, "high standards for all," but not necessarily college, because "we need good plumbers, too" (Workforce America Conference, 1988).

A final commentator suggests that good educational practices "share common themes. Among these are: less emphasis on memorization and rote drill and more emphasis on problem-solving; a sharper focus on active participation by students; and more attention to relating school work to students everyday lives" (Rothman, 1989).

MORE ON INTEGRATED AND FUNCTIONAL CONTEXT LEARNING

In surveying 100 workers reflecting a representative cross section of occupations in 1980, Indiana University researcher Larry Mikulecky looked at reading to get a handle on basic education in the corporate world. He learned that almost 99 percent of the workers participated in some kind of reading each day, and that each averaged about two hours a day writing and reading prints, charts, drafts and computer terminals—at an average eleventh grade difficulty level. The study concluded that the workplace called on a wider range of literacy strategies than was required for school literacy. In high school, the study suggested, students read to gain information. While on the job, adults use print to help them do their work, going back and forth between the print and their tools and equipment. They help each other to read the material and to find out what's relevant and what they need to know to get the work done.

The conclusion arrived at here—born out by Tom Sticht in his research on the military—is that general reading skills do not easily transfer to technical reading

skill, and fairly quick learning is possible reading technical material, if training and materials are provided on the job and are job related. This is functional context learning which is largely experiential, activity-based, concrete, practical, peer-directed, goal-oriented, criterion-referenced and integrated—that is, a system that incorporates the good educational practices we have discussed above.

In short, people learn more easily using real life tools and materials in real life settings, motivated by real goals and/or needs, such as, to get the job done, or, for that matter, to care for a sick child, prepare a meal, vote, or understand the Sunday sermon. That is functional contextual learning, whether the context is the workplace, the home, the community, the church, or any other context.

But what about the transferability of technical reading skills to general reading skills? The Grant Foundation Commission points out: "Research has shown that effective learning is closely related to successful performance in the workplace" (Youth and America's Future, 1988b, p. 128). ASTD contends that

> basic academic skills expand and grow when used on the job. People use what they learn on one job to leverage a better job . . . On-the-job learning can leverage earnings by as much as 30 percent (Carnevale et al., N.D., p. 5).

So teaching a subject contextually means that a mechanic learning basic skills in order to master SPC should study basic reading and math using his SPC manual. But it implies far more than this. It means that we must incorporate reading and writing processes and/or activities into classrooms in ways that are not "divorced from real reading and writing tasks" and we must "teach students how to use them to advantage in their own reading and writing" (Applebee et al., p. 37). A way to teach reading and writing, for example, would be for students to listen to tapes of Martin Luther King's speeches and write about what he means to them and/or to civil rights advocates. In social studies and journalism classes, Mikulecky suggests, students should be assigned to comb local census data to find out and then write about the impact of local population changes on local schools, hospitals and fast food places. In reading Huckleberry Finn in English class, he says, students might compare Huck's adventures with recent newspaper accounts of teenage runaways. Science classes might collect printed information to analyze environmental issues. To sharpen speaking and listening skills, students might

read up on political charges and counter-charges on Noriega and North to debate "aid-to-Contra" and drug issues. Similarly math should be taught "through calculation problems relating to bus schedules . . . [and] getting to work on time" and not to long-distance trains which few youth ride these days (Strumpf, 1987, p. 44). The Grant Foundation Commission points out that:

> Trigonometry learned in the school's machine shop or in the workplace complements study in the classroom. Botany may be learned in a horticultural laboratory or in a field station or, better yet, in both (Youth and America's Future, 1988b, p. 129).

Practitioner-researcher Jorie Philippi quotes a number of erudite cognitive theorists, and suggests that, "using existing 'mental hooks' (schemata) derived from (learners') work, environment and experience"—that is prior knowledge—"to attach new information, helps ease the incorporation of new knowledge into the old" (Philippi, 1988, pp 3-4).

Educational researchers are meeting up with the learning theorists and psychologists in suggesting the complexity of reading tasks:

> The integration of reading, listening, writing and speaking may not derive easily from separate experiences with these processes, and the more complex literacy abilities that combine, for example, reading, logical/mathematical analysis, and composition might not develop to their desired levels from separate instruction in the included subjects (Venezky et al., 1987, p. 45).

Math experts arrive at similar integrative conclusions concerning learning in their sphere:

> The narrow track from arithmetic to calculus must be replaced with a map that clusters and interconnects geometry and measurement, statistics and probability, patterns and functions, logic and numerical analysis. These various domains all have roots in concrete and intuitive experiences that can and should be studied by young children as well as by adults (Stage, 1988, p. 7).

And in science:

> curriculum in the United States has frequently been criticized as a "layer cake" in which students study different areas in isolation and

> then leave them behind for the rest of their school career. Even if they take science every year, American school children who pass through this layer-cake curriculum fare relatively poorly compared with their peers in other developed nations, where the work of each year builds upon and extends the work of the previous year (Applebee et al., 1989, p. 32).

And in social studies: the Columbia-Vanderbilt universities educational research collaborative suggests we "(t)each history in context so that people and events are seen in relation to consequential social and economic trends and political developments"—meaning that when we study a particular period in history, we need to go beyond the memorization of dry facts and dates to look at people, places, ideas, myths, literature, art, law and government systems (Finn and Ravitch, 1987, p. 205).

In other words, we must teach basic and higher order skills in integrated functional context, experientially, with emphasis on ideas and relationships, not memory and drill. Former Wider Opportunities for Women (WOW) practitioner Barbara Macris put it more succinctly: "We teach literacy across all of the components of our programs, so the principles are constantly reinforced" (Wider Opportunities Conference, 1988).

None of this is new: when College Board developed the "Basic Academic Competencies," it cautioned that these are not to be taught "as separate courses but as learned abilities that students should develop through study and practice in all subjects during their high school years" (The College Board, 1984, p. 3).

Harvard education professor Jeanne Chall says reading problems start at the fourth grade because once reading is used as a tool for learning (reading to learn in place of learning to read) children "need the vocabulary and knowledge of the world," which is "more context and more content" than schools are able to provide (Contact Literacy Center, 1987, p. 4). That is the position taken by E.D. Hirsch whose Cultural Literacy compiles a list of 5,000 essential names and concepts that would give Americans the background knowledge they need to communicate, learn and compete in today's world. Hirsch charges that this is not being taught in the schools and especially in schools serving the disadvantaged.

Once we look seriously at good educational practice and see integrated, functional context learning for what it really is, the divisions between academic and vocational; head and hand; school-based, work-based or experience-based, begin to blur. Workplace literacy, employer, union-sponsored and employment training needs can be seen as far more sophisticated and far more rigorous than educators seem now willing to believe.

THE CULTURE OF THE LEARNING SITE

A UAW-GM trainer, Paul Polidink, thinks he has identified what distinguishes education from training—schoolrooms from corporate classrooms. He points to shared principles and strategies. In his view the "technical system"—the strategies and techniques that make up good educational practice—are subordinate to the economic, cultural and political systems of organizations and institutions. The economic system—the environment, materials, personnel, methods, machinery and desired outcomes—in each school or factory or learning center or Job Corps site or prison or church—differ substantially. In each unique environment, the trainer/educator works only with the personnel—the workforce, the students, the inmates. But the trainer/educator must pay attention to the cultural system in each plant, school or learning center. This powerful influence is summed up as "the way we do things"—the shared beliefs and values that, even though unwritten, provide rules for behavior, whether written or not (Adult Literacy and Technology Conference, 1988). Recall, for example, the white shirt, for years the hallmark of an IBM executive. The training manager of Hershey Foods in Hershey, Pennsylvania, complained that often well-meaning educators come in to teach basic skills but "they don't do things our way and we have to tell them" (Adult Literacy and Technology Conference, 1988). Mazda's training director suggests that though training is proceeding well it will be "ten or fifteen years" before the culture of that company will be imbued in the American workers newly hired to work the Flat Rock, Michigan, plant (ASTD - DOL Symposium, 1988).

In fact, ASTD recommends as part of basic skills training a segment on organizational effectiveness. After introducing employees to what organizations are, why they operate and what kinds there are, the trainee, according to ASTD, should be "exposed to the organizational culture of his or her employer, its goals, values, culture and traditional modes of operation" ("Workplace Basics," N.D., p. 15).

So, advises UAW-GM trainer Polidink, when an educator or trainer arrives at a new site:

> listen, talk to managers and workers, read up on the plant and read its newsletter and other handouts; don't judge, don't take sides and, most of all, remember that motivating and then teaching workers and students is your responsibility. Nothing more, nothing less.

When it comes to the political system—who gets ahead, who gets and holds the power, who gets rewarded and who punished—"don't get involved because you'll only get killed" (Adult Literacy and Technology Conference, 1988).)

TOWARD A CONCLUSION

With the technical and cultural aspects of education and training in mind, what can we conclude about the dilemma we face in developing a sufficiently learned populace for the rigors of life and work in the 21st century? If "enough is known for action" what is the problem? Why are we not turning out more learned high school graduates, turning around the drop-out statistics, retraining the workforce, and engaging a thoughtful populace in the political and ethical decisions of our nation? Why do we find "the best and the rest" in the schools, classrooms and training centers of all the providers of basic education (ASTD - DOL Symposium 1988)? Why are our students—our educational products—inferior to those turned out abroad? Why aren't we doing a top-notch job in teaching basic skills, adaptive skills, and critical and high order thinking skills?

Chairman William Woodside, of the Northeast-Midwest Leadership Council and the Institute for Educational Leadership, finds the problem is bigger than education, bigger than the schools. He says it is societal:

> We cannot reasonably ask or expect our public schools to tackle poverty and all the associated problems poverty brings to bear on children . . . . We have come to expect so much of the schools because they have guided so many people out of poverty in the past. But this pathway out of poverty and deprivation . . . is a lot more complicated today than it was in 1930 or even 1950 ("Education Incorporated," 1988, p. 6).

Xerox CEO David Kearns and Hudson Institute senior research associate Dennis Doyle argue in Winning the Brain Race that schools today are like businesses were a decade or two ago when they faced new global competition. Under traditional management structures, poor in quality, low in efficiency, companies were unwilling to believe in the need for change, for a new way of thinking to compete with Japan and other emerging technological competitors. Companies, like Xerox, that restructured, came through; those that did not, went under.

Speaking at the Business Round Table 1989 annual meeting, Bell South Corporation CEO John Clendenin summarized the business view: "Incremental improvements here and there won't do anymore. We need reform, restructuring. Call it what you will, we need fundamental change" (Pipho, 1989, p. 17). CED calls this nothing short of "a fundamental restructuring of the way most schools are organized, staffed, managed and financed . . . [and] we need to rethink the relationship of the school to the community" (Committee for Economic Development, 1987, p. 12).

In a recent speech, Doyle said this will bring business and the schools "to the bargaining table or the wrestling mat, whichever metaphor you want to use," to "thrash out" the crucial issues that will enable schools to move from "protected monopolies" to providers, once again, of a true liberal education which is also:

> Today a truly vocational education meaning that you are able to think, draw inferences from complex passages, communicate, and . . . continue learning to learn (Callahan, 1989, pp. 1 & 10).

But what do we mean by fundamental change? How do we restructure our educational enterprise? A reading of proposals to solve the education crisis—from business reformers (like CED, the Business Roundtable and NAB), from adult educators, from second chance education and poverty programmers, from the economists, and, now, from the Governors and the President themselves—come down to a few surprisingly consistent points:

> 1) Heavy and constant assistance to pre-schoolers and their parents, especially disadvantaged mothers. This includes pre- and post-natal

care, day care, parenting instruction, and support to proven programs like Headstart.

2) More and better help to teenagers, especially minority and at-risk males, drop-outs and non-college-bound youth. This includes school-to-work transition programs, work-and-study and summer programs, strengthened vocational education and apprenticeships, efforts to improve "motivation, skills and self-esteem" (Committee for Economic Development, 1987, p 14).

3. Better schools, consisting of better trained and better paid teachers, alternative certification, principals competent in management as well as education techniques, smaller classes and schools, increased understanding and use of technology, and improved higher order curriculum (especially in math, science, technical subjects, problem-solving, and critical thinking), incentives to students and teachers, higher behavior standards and expectations, and support to proven programs like Chapter I and Teacher Corps.

4. Increased emphasis on education of the employed and of displaced workers and the unemployed because 75 percent of the nation's workforce of the year 2000 is in the workforce today, linking adult and vocational education, employment training, welfare and family literacy.

All of this will take a tad more money, but by no means the heavy investments we've seen such as the $70 billion plan to build a Stealth bomber fleet (Moore, 1988, p. A10) or the $164 billion Savings and Loan bail-out recently voted by the Congress (Havemann, 1989, p. A22).

In 1964 it was estimated that $11 billion a year would bring all poor families up to minimum income standards. Today, the Ford Foundation calls for an annual $29 billion increase in federal spending to expand help to poor children, young adults, families, the elderly, and the unemployed, in a comprehensive approach that will "stop pitting one group against another in the struggle to improve social policy" (Ford Foundation, 1989, pp. 1, 82).

CED wants full funding for Chapter 1, Head Start, "and related programs" (Ford Foundation, 1989, p. 18), including employment training and other programs "for older youths" (Ford Foundation, 1989, p. 15). While "[m]any of these programs are expensive . . . for every $1 spent today to prevent educational failure, we can

save $4.75 in the cost of remedial education, welfare, and crime further down the road" (Committee for Economic Development, 1987, p. 15).

The Grant Foundation Commission recommends a ten-year annual $5 billion increase to expand Head Start, Chapter 1, Job Corps, JTPA, and local and state school-to-work options plus $250 million a year over five years to mount a Fair Chance Program, "to stimulate the development of an integrated approach to the education, training and service needs of all youth" (Youth and America's Future, 1988b, p. 10).

The Project on Adult Literacy suggests an annual increase of $556 million to support new legislation—the Adult Basic Skills Act of 1989—which would provide additional dollars for research and development, leadership and teacher training, worker basic skills training, and fully fund the Adult Education Act, the Even Start family literacy program and Vista.

So much for public investment. On the private side, Carnevale says business should increase its training budget from $30 to $88 billion—from about two to four percent of payroll—to cover a total 30 percent of the workforce (ASTD, "Measurement"). Adult educators would settle for a 10 percent commitment from the $30 billion corporate budget for basic skills instruction (Chisman, 1989, p. 11), estimated to be only $2 billion now.

The Labor Department-appointed Commission on Workforce Quality and Labor Market Efficiency now speaks out for increases in both public and private expenditures, but it does not say how much. In investing in People, the Commission calls for:

> Additional human capital investments by states, communities, individuals, and American business.
>
> A reallocation of federal human resource expenditures.
>
> A sustained increase in federal expenditures on human resource programs (p. vii).

To translate dollar needs into numbers of people served: today there are some three million children eligible for Headstart programs, but only about 400,000 are in them (Hodgkinson, 1985, p. 9). Only about five percent of eligible workers, youth and adult, are getting JTPA benefits (JTPA Advisory Committee, 1989), and Job Corps serves only 63,000 clients a year, as compared with 625,000 admissions to juvenile correction homes in 1984 (JTPA Advisory Committee, 1989). Meanwhile, AFDC benefits dropped 30 percent in purchasing power over the past fifteen years (Rich and Vobejda, 1986) and, according to the Washington Post, "inflation has reduced the actual purchasing power of most welfare programs to half or less of their 1968 values" (Wright, 1988, p. 8). "Regardless of the income measures used," wrote a Census Bureau poverty expert in a recent Monthly Labor Review, "it would appear that the poor are no better off in the 1980s than they were in the 1960s and 1970s" (Littman, 1989, p. 17).

Proposed solutions seem to center on coordination of programs, dollars, policies and services. The President and the Governors think this can be done by setting a national agenda, timetable and reporting-and-accountability system while allowing states to restructure education following local determination of the how's, who's and what's. CED recommends this and calls it "a 'bottom-up strategy that views the individual school as the place for meaningful improvements in quality and productivity" (Commission on Workforce Quality, 1989, p. 7). The commission on Workforce Quality adds to this equation "a coherent system of lifetime education training," urging financial relief for employer training plus extra "commitment," "focus," and dollars to government training programs for the disadvantaged. The commission calls for "a public/private partnership" and a "cabinet-level committee to coordinate human resource policy" (Commission on Workforce Quality, 1989, pp. vii-viii).

Employment and training system spokesmen from the National Alliance of Business (NAB) also argue for partnerships between business, education, training and, most recently, welfare, proposing that the Private Industry Councils (PIC's) and the State Job Training Coordinating Councils (SJTCC) be broadened to represent and coordinate many previously separate programs. Now the new JTPA bill, currently making its way through Congress, broadens the make-up of the PICs to include organized labor, community-based organizations as well as education, vocational rehabilitation, economic development and public assistance program

representatives. It also requires each Governor to set up what some are calling a "super council"—the Comprehensive State Human Resource Investment Council—to replace state JTPA, adult and vocational education, welfare and employment service councils to oversee these programs (National Alliance of Business, 1989b, p. 1).

Economist Pat Choate continues to recommend a national training strategy to rationalize the maze of remedial and catch-up programs for displaced workers and at-risk youth, and at the same time coordinate private with state and federal program efforts. He says:

> We need to look carefully at devising some form of cooperative federal government/state government/local government/ business/union/employer strategy/national training and adjustment strategy to help workers make (needed) adaptations (American Association of State Colleges and Universities, 1986, p. 16).

The Ford Foundation envisions a new entity: a community-wide "committee composed of schools, job-training and business representatives" to assess "the state of local youth resources and develop a plan to deal with deficiencies." Such a group needs school and private sector involvement and must remember "the inter-relatedness of leaving school, teenage parenthood, employment, and welfare dependency" (Ford Foundation, 1989, p. 89).

Adult educators agree that coordination is needed. They call for a "comprehensive system of adult literacy services" which are linked to welfare, education, employment training services via "greater use of funds appropriated through these programs." They also want coordination between vocational education, vocational rehabilitation and state job training councils and also propose a federal Cabinet-level council to ensure federal coordination and a National Literacy Center to coordinate public-private national, state and local interchange in programming, resources, training and research and development. These proposals are embodied in legislation now making its way through Congress.

Labor Department Assistant Secretary Robert Jones, recognizing that JTPA, vocational education and welfare legislation all deal with training, says "we can't

continue to allow separate fiefdoms." He continues, "we can employ everyone who's out there" if we can develop a "quality workforce" (ASTD-DOL Symposium, 1988). Pointing to the estimated 25 million jobs to be created between 1984 and 2000 (Johnston and Packer, 1987), Jones maintains that we can prepare our teenagers and recycle our workforce only by cutting out bureaucratic in-fighting, decreasing duplication, maximizing dollars and using all the systems via a school-business-labor-government partnership in which business gets out the message that these are "workforce issues and not a bunch of social programs" (ASTD-DOL Symposium, 1988).

Carnevale foresees that this will take "sharing" among the systems plus new effort on the part of the schools; expensive employee benefits like day care and parental leave; tax credits or other incentives so business will increase its already high investment in human resource development; new focus on the non-college, technical and blue collar workforce and new emphasis on math and science (ASTD-DOL Symposium, 1988).

Mike Bailin of Public/Private Ventures (P/PV) agrees on the need for coordination but suggests that "services . . . must be comprehensive and integrated," that the "institutional reforms" should "intensify and link services better." But he warns:

> P/PV's experience is that the separate goals, procedures and identities of the various . . . institutions — in short, their 'turf' — are critical barriers to achieving integration and coordination. In fact, these barriers are equal to if not greater than the problems of resources and commitment (p. 68).

One commentator reminds us we must remove the legal barriers to coordination before major federally funded programs can really work in tandem. The new welfare legislation, the Family Support Act and its regulations, he says, tout coordination but, "mandate processes and definitions that are so alien to existing programs that cooperative efforts will be all but impossible" (Callahan, 1989, p. 9). Now the National Commission for Employment Policy has put out a monograph that looks at legal and fiscal impediments to coordination between the Vocational Education Act and JTPA (Brustein and National Association of State Directors, 1989).

Adult Literacy advocates say "(l)ack of coordination and 'turf problems' are legendary" at the federal level, while "(i)nstitutional fragmentation is as bad or worse at the state and local government levels," with the result that "(b)asic skills are a low-level priority for almost everyone," and "responsibility is widely diffused among multiple institutions," including the Departments of Education, Labor, Health and Human Services, State, Agriculture, Justice, and ACTION, along with the state and local affiliated bureaucracies. Says the report: "level of spending is probably a less serious problem than diffusion of responsibility" (Chisman, pp. 6-8).

What is probably most telling in all of this is that many of the systems under investigation in this study are now talking and pursuing collaboration more than ever before. The adult basic education system has its National Coalition for Literacy and its Literacy Network (which recently sponsored a National Forum on Literacy Collaboration). NAB is focusing on twelve city-wide education-business "compacts" and local Jobs Collaboratives to bring business and schools together to forge school reform and better school-to-work transitions. The K-12 system has a "Joining Forces" project to link schools with social welfare agencies to help families and children to better schools so they'll stay in school.

State-wide and local coordination efforts are cropping up is almost all of the systems surveyed. One effort at the state level has been the nine-state "academy" effort mounted by the Council of State Policy and Planning Agencies with Labor Department funding. This project brought together key policy-makers from the areas of literacy, education, employment and training, and human resources—each appointed by the appropriate governor of each of the nine states—to develop partnership and interagency approaches to integrating literacy programming in each state. (See the Academy Final Report for further information on this effort.)

The latest bulletin in the chronicle of partnership and coalition building comes the announcement late in September 1989 from eight business groups of the formation of the Business Coalition for Education Reform. Its purpose will be to "work to increase action by leaders in business, education, government, labor, and community groups in addressing America's crisis in education" (NAB news release, 1989). The coalitions six-point agenda reflects virtually all the points made above.

So collaboration is being pursued on all levels—federal, state, local community and in individual schools, training and learning centers, public and private. If the top-down strategists coping with legislative, legal and bureaucratic obstacles can meet the bottom-up strategists, who are coping with human as well as their own bureaucratic stumbling blocks, perhaps there is a chance to overcome built-in tradition and inertial to develop real coordination and collaboration.

College Board president Donald M. Stewart sums up:

> While there is absolutely no question that additional resources are requisite to solving this basic skills deficit problem, we must also ensure that they are well utilized. We have to have a workable plan for greater coordination and cooperation among the dizzying number of current and potential actors: federal, state, and local governments; education, training, welfare, and economic development systems; public and private sectors; and the various levels of schooling (Committee for Economic Development, 1987, p. 84).

Former Ford Foundation Urban Poverty Program Director Gordon Berlin adds:

> there is less of a problem of what to do than of how to do it on a large enough scale and on a sequential basis, so that one intervention serves as a stepping stone to the next intervention (Wider Opportunities Conference, 1988).

In 1964 the Economic Report of the President entitled The Problem of Poverty in America noted that education is an important factor in poverty and "inadequate education is perpetuated from generation to generation." The report said,

> Programs must be sufficiently coordinated that whatever else they individually accomplish, they act together to lift the economic and social status of America's poor. And soon. For war has now been declared on poverty . . . (p. 77).

Coordination and resources: two requirements for economic and social improvement, have been eluding us, it seems, since the sixties.

But new and redirected funds plus improved coordination are not the whole story. In her recent book, Within Our Reach (1988), poverty analyst Lisbeth Schorr charges that we know how to solve the poverty crunch but what we lack and what we need is "a national commitment of consequence—specific in its objective, broad in its scope and enduring in its staying power" (p. 292) to include long-term systematic intervention early in life, a broad flexible spectrum of services to strengthen families as part of neighborhoods and communities as well as caring trained staff and more effective school and pre-school programs. Says Schorr, "quick fixes and cheap short-cuts" won't work, "time-honored bureaucratic traditions must be changed." We must, in short, find "new ways to cross ancient boundaries" (Schorr, 1988).

That is indeed what the Business Higher Education forum meant in recommending that "to re-establish the link between education, work and a sense of purpose" (Business-Higher Education Forum, N.D., p. 10), and to handle the technological, demographic and social developments of our time "requires a new national consensus and sense of direction." We must, says business, "rekindle in our people, especially our young, a new sense of commitment to the values that have always empowered Americans in work and life" (Business-Higher Education Forum, N.D., p. 18).

So the solutions come down to more funds, better coordination and a will to do. But it is also as much a matter of who will control the money, what will be done with it, and which program will take the lead in coordination. The education and work dilemma is how to pull off a collaboration that will indeed maximize the funds while minimizing duplication and/or conflict of services.

Whatever it takes, all are agreed, we know how to do it. We need more but not unlimited resources to do it. And we need to bring the competing systems—the turfs—together to restructure our schools, adult education and second-chance programs; employment, employer and union training programs, so that all of them—not some, but all—can incorporate the strategies we all know work to build a unified system that can serve us in the workplace, in the home, in our communities, in civic and religious life, in the cities, the suburbs and the country—in short, into a collaborative system that can serve us all.

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Applebee, Langer, Mullis, 1987
Venezky, Kaestle, Sum, 1987
USDE, What Works, 1986
Working in Urban Schools, 1988
ADVISOR: Dr. Harvey Scribner, professor, College of Education, University of Massachusetts (Amherst)

SYSTEM: Second Chance Programs
REFERENCES: Hahn, Danzberger, Lefkowitz, 1986
Levin, 1986
Single Mothers Literacy Seminar, 1988
ADVISOR: Sandra Van Fossen, Director, National Programs, Wider Opportunities for Women, Washington, D.C.

Among second chance programs are those run by Wider Opportunities for Women and other members of the Rockefeller-sponsored Single Mothers Network as well as those of the OIC (Opportunities Industrialization Corps), Job Corps programs, Ser-sponsored literacy programs as well as the programs listed in the National Directory of Community Based Adult Literacy Programs.

SYSTEM: Adult Basic Education
REFERENCES: Leach, 1985
ABE-GED in Community Colleges, 1988
Single Mothers Literacy Seminar, 1988
ADVISOR: Dr. William S. Griffith, Professor of Adult Education, The University of British Columbia, Vancouver, Canada

SYSTEM: Military Training System
REFERENCES: Philippi, 1988, April and September
Sticht, 1987
ADVISOR: Dr. Joseph D. Smith, Chief of Naval Education and Training, Naval Air Station, Department of the Navy, Pensacola

SYSTEM: Continuing Education
REFERENCES: Principles of Good Practice in Continuing Education, 1984
ADVISOR: Dr. John Kortecamp, Executive Director, Joint Ventures Center, Council for Adult and Experiential Learning, Philadelphia

SYSTEM: Vocational Education
REFERENCES: Veach, Crowe, 1987
Pritz, Naylor, 1988
ADVISOR: Sandra G. Pritz, Senior Program Advisor, Center on Education and Training for Employment, Ohio State University

SYSTEM: Proprietary Schools
REFERENCES: Moawad, 1987
Philadelphia Training Center Corporation
Harris, Hillemmeyer, Foran, 1989
ADVISOR: Dr. James M. Phillips, Executive Director, Association of Independent Colleges and Schools Accrediting Commission, Washington, D.C.

SYSTEM: Employment Training
REFERENCES: Morris, Strumpf, Curnan, 1988
Strumpf, 1987
Single Mothers Literacy Seminar
ADVISOR: Esther Friedman Schaeffer, Senior Vice President, National Alliance of Business, Washington, D.C.

SYSTEM: Employer Training
REFERENCES: Carnevale, Gainer, Meltzer, 1988
ADVISOR: Anthony P. Carnevale, Vice President/Chief Economist, American Society for Training and Development, Washington, D.C.

SYSTEM: Union-Sponsored Training
REFERENCES: AFL-CIO, Union-Sponsored Programs, 1988
ADVISOR: Anthony R. Sarmiento, Director of Administration, AFL-CIO Human Resources Development Institute, Washington, D.C.

SYSTEM: Workplace Literacy
REFERENCES: Sticht, 1987
Mikulecky, 1986
USDE & USDOL, 1988, The Bottom Line
ADVISOR: Gail Spangenberg, Vice President, Business Council For Effective Literacy, New York, NY

Workplace literacy is not a discreet delivery system; instead it embraces employer, union and employment training systems and can be offered through these delivery systems as well as through adult basic education, continuing education and second chance programs. It is defined here as literacy programming for public and private employees, as contrasted with workforce literacy which would be provided to the entire workforce, unemployed, employed, youth, displaced workers and so on. The column is included in the matrix only to demonstrate that what is often looked on today as a new educational field for the development of special techniques, materials, etc. is simply another way of describing programs that already exist, many of which are good programs. Good practice in workplace literacy bears a remarkable similarity to what seems to be universally agreed-upon good practice in varied educational endeavors.

APPENDIX A - 22 GOOD EDUCATIONAL PRACTICES

PRACTICES	K - 12	SECOND CHANCE PROGRAMS	ADULT EDUCATION	MILITARY SYSTEM TRAINING	CONTINUING EDUCATION	VOCATIONAL EDUCATION	PROPRIETARY SCHOOLS	EMPLOYMENT TRAINING SYSTEM	EMPLOYER TRAINING SYSTEM	UNION - SPONSORED TRAINING	WORKPLACE LITERACY
WRITE MEASURABLE GOALS	Teachers collaborate in developing goals that emphasize student achievement. Need clear purpose and agreement for process for accountability, such as how measure and frequency.	Diagnose needs and set realistic goals.	Clear measureable goals tie learning objectives to methods and materials and to assessment.	Write learning objectives for each task.	Clear and concise, written statements of intended learning outcomes.	Clear measureable goals-be learning objectives to methods and materials and to assessment.	Goals clearly defined, written and reviewed. A syllabus for each course must contain measurable outcomes.	Clear performance standards are followed. Develop strategy plan via structured process that identifies purpose, targets group outcomes, assessment and delivery strategies.	Problem identification and needs analysis; job and task analyses; written performance objectives. Connect goals to a hierarchy of objectives extending from learning objectives to performance objectives.	Learners select learning objectives based on such outcomes as job or apprenticeship advancement, job certification, citizenship.	Set goals linked to company's and learner's. Use literacy audit or job task analysis.
FORMULATE LEARNER PLAN		Individual learning plan.	Diagnose each learner's needs and strengths and develop individually tailored learning plan for each, if high costs permit.		Know level and background of participants.	Academic Development Plan (ADP)	A written plan should describe data gathered, be used to improve program and provide evidence of effectiveness.	Formulate individual descriptive employability development plan.	Individual lesson plans. Employee learning contracts should connect to strategic performance goals.	Learning plans are often tied to occupational and certification requirements as well as learner's personal priorities.	Planning needs to involve high and middle management, line supervisors, outside experts, unions and employees themselves.
EVALUATE/MONITOR VIA PRE & POSTTESTS	Frequent and systematic monitoring of student progress. Need tests that serve as diagnostic tools.	Assess client needs through pre-testing and assess support service needs and client ability to complete program.	Student assessment of needs and progress. Explicit about intended learning outcomes and standards for judging. Oral and interview techniques should be used.		Assessing learner needs is systematic, objective is documented and basis for developing outcomes. Performance is assessed in terms of intended outcomes.	Monitor learning progress and mastery of learning objectives	Student progress must be measured.	Pre-test and post-test tests are used to verify competence attained. Relate assessment to curriculum to instruction.	Objective oriented. Evaluate training effects on actual job performance based on pre- and post-tests, good record keeping, and monitoring as well as goals of operating unit and/or work team.	Some programs use pre- and post-tests to determine learning gains; others rely on other assessment methods. Privacy and confidentialty of learners' records is maintained.	Administer job-specific pre- and post-test with explicit standards: can employee do the job?
MASTERY LEARNING/TESTING	Mastery learning. Must accept everyday literacy tasks as the measure, not school curriculum.	Mastery testing and learning via learner-centered curriculum.	Mastery testing, where useful. But GED testing and credentials remain key.	Measure achievement on actual job reading tasks. Success is defined in terms of competence achieved.	Mastery learning for training activities; more informal, anecdotal and observational techniques for education programs.	Criterion- referenced testing.	Testing of skills achievement is used as measure of subject matter mastery.	Benchmark progress against specific goals. Continue until learner demonstrates mastery. Trend to criterion-referenced testing.	Criterion-referenced testing, along with qualitative evaluation by peers and supervisors.	Criterion-referenced testing is used wherever appropriate.	Teach reading strategies that will enable learner to accomplish tasks and solve problems.
FREQUENT FEEDBACK	Prompt feedback for pupils.	Students need immediate progress and feedback.	Frequent positive feedback to learners, with documentation, is necessary.		Feedback to learner. Learner-to-learner feedback.	Competency based system provides for assessment and feedback on every task.	Use is increasing of computer-assisted instruction in skills, developing courses which give instant feedback to students.	Learning should occur in small units with immediate payoff or feedback on performance.	Feedback is performance-based: proof of performance is in quality of the product.	Feedback is immediate, specific and frequent, with emphasis on positive attainment rather than negative performance.	Frequent feedback to worker-learners as well as to program operators and planners, internal and external.
TIME-ON-TASK	More time expended, higher the achievement. How much time students are actively engaged in learning contributes strongly to their achievement.	Full-time, year round schooling. Track attendance, time-on-task and intensive study.	Maximum time-on-task. Increase time spent on reading and on discussion for understanding.	Practice task until mastery. Greatest amount of time possible is spent with each trainee actively engaged in a learning task.	Provide reiteration of major concepts & skills.	Drill-work. Reinforcement. Time-on-task. Supervised practice.	Track attendance and track students daily.	Provide intensity of training, that is, spend enough time on task to master it.		Programs, especially those where learning takes place during work hours, emphasize maximum time on task to achieve desired learning gains.	Apply on the job what they are learning.
MOTIVATE/ BUILD SELF-ESTEEM	Set high expectations. Reward hard work and self-discipline; expect and reward academic success, establish an ethos of achievement.	Build self-esteem and motivation. Provide incentives. Celebrate graduation and every success.	Positive reinforcement is needed without negative feedback.	Preserve self-esteem and boost motivation. When possible, task achievement leads to promotion.	Recognition is provided for performance.	Motivate students. Provide incentives. High expectations. Reward success.	Build unconditional self-esteem; instill confidence; motivate; reward for attendance and achievement. At least one formal course emphasizing self (how to dress, talk, organize, personal finance) is given.	Provide motivation, self-esteem and awareness of personal and career development.	Train in self esteem, goal setting, motivation and awareness of personal and career development.	Motivate, develop self-confidence, empower. Progress is often rewarded by job and pay advancement.	Provide incentives tied to goals. Deal with whole person, not just educational needs.

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SELF-PACED	Each individual has own rate of learning.	Computer-assisted, self-paced.	Group oriented with provision for individual pacing.	Self-paced.	Paced to meet individual needs.	Students learn at own rate.	Setting arbitrary time limits is avoided.	Self-paced.	Self-paced.	Wherever possible, learner determines pace and schedule.	
SELF-DIRECTED	Students agree on contract.	Open entry, open exit. Involve participants in own learning.	Program planning is respectful of need to encourage self-directed learning.		Self-directed and planned programs of study.	Activities are relatively self directed with the teacher in a facilitator role.	All correspondence is almost totally self-directed.	Self-directed job placement after training.	Self-study.	Learner-centered approach, related to personal interests, occupation, citizenship, family or union.	
COMPETENCY-BASED			Competency-based, with adequate emphasis given to GED where appropriate.	Competency based instruction.		Competency-based.	Need more competency-based proprietary school learning.	Competency-based.	Performance-based. Use a "competency profile" to track progress.	Functional competence and competency-based. Competencies often tied to outside occupational certification requirements.	Functional competence in job tasks is stressed.
ACTIVITY-BASED	Promote experiments to show "science in action." Encourage drawing and scribbling as leading to composition. Hands-on involvement. Engage learners in discussion.	Learn by doing. Activity-centered including internships and field trips.	Relate to meaningful occupations; always functional contextual.	Actively engaged in learning task.	Promote active learner participation.	Activities are participatory and related to real world.	There is lots of activity-based instruction, including fashion and modeling shows, video taping of performance.	Combine work and life skills with learning. Teach academics thru functional work and life-related activities.	Interactive instruction and role-playing.	Learning by doing is combined with classroom activities.	Apply what is learned on the job.
FLEXIBLE	Participatory classroom experience is important.	Flexible.	Flexible scheduling.		Flexible to meet schedule and site needs of on-site programs.	Use "inquiry" method.	Hours are long and total program time thereby shortened so flexibility is limited.	Open entry, open exit.	Strategies and analytical approaches show learner how he learns best.	Flexible hours, schedules and locations.	Hours and scheduling are flexible.
INTEGRATED	Teach reading and writing in context of real reading and writing tasks. Teach reading, logical math analysis and composition at same time, not as separate experiences.	Integrated: teach across all components of the program. Comprehensive program of basic skills, life skills and occupational skills.	Basic skills (including speaking, listening, observing, and interacting) should be embedded in functional materials. Teach across subjects.	Provide "mental books."	Help learners understand relationships between concepts.	Basic skills are integrated into vocational courses. Academic skills are embedded in vocational education.	Basic skills are integrated into vocational courses--academic skills are embedded.	Teach some basic skills in the context of job-related function or activity.	Blended and/or embedded in other training.	"Open architecture" allows for integration of additional supplementary or core instructional material in either academic or life skill component. Distinction between basic and technical skills and training is minimized.	Curriculum organized by job task or job type, not discreet basic skills.
CONTEXTUAL/ FUNCTIONAL	Precede lesson with background information and follow with discussion. Background knowledge, called cultural literacy, helps students grasp meaning.	Learn functional skills. Contextual: relevant. Emphasize school-to-work connection and lifelong learning.	Functional contextual--training in a context. Basic skills can be learned while you apply them whether at work, in the home, in the exercising of citizens' rights, and so on.	Functional context skills are best learned if they are present in a context that is meaningful to the person.	Learning should not be isolated but should be a part of learner's total ability to be employed in various situations.	Applied learning and academics. Occupationally related reading and math.	Provide relevant programs.	Contextual and functional.	Functional context, applied context. Work-related application.	Curriculum and learning format are customized to relate to learner's work and life, tailored to the learner as worker, union member, citizen and parent.	Provide tasks and materials that fit specific job context and content.

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LOW PUPIL-TEACHER RATIO		Small group and one-on-one.	Teachers and aides provide one-on-one attention and/or tutoring for hardest-to-reach. Improving group teaching technique for higher level is economic necessity.		Number of instructors should permit use of creative methods and group interaction	Team teaching, use aides and "itinerant resource persons." Research shows smaller class size than non-vocational at same class levels.	The average teacher-student ratio was 1:17 in 1987	Ideal is1 to 12 teacher-pupil ratio.	One-on-one, small group.	Many programs, particularly apprenticeships, are required by contract to maintain low learner-teacher ratio.	
PEER TEACHING/ LEARNING	Students tutoring other students is powerful strategy.	Mentorship and peer teaching and learning work well.	Team spirit among staff and students. Peer counseling and teaching, plus a buddy system. Peer recruitment is also useful.		Group activities and group feedback.	Peer tutoring. Team commitment. Cooperative or team learning	Group study and practice is used.	Team approach is useful.	Team concept. Peer group supports group effectiveness. Interpersonal skills, negotiation, team work.	Peer teaching, buddy system, team approach. Union journey-level workers and stewards often serve as instructors and/or counselors.	Where appropriate to context, use peer teaching: employees work together and learn from each other. Use peer recruiters.
SUPPORTIVE FACULTY	Recruit and reward good teachers and principals. Student counseling and others to help with social and personal problems.	Caring, supportive staff, and sustained counseling.	Supportive teachers act as informal counselors and facilitators, providing at least same level of support given regular students. Need teachers who care.	Military support network from personnel in supervisory position.	Instructor must be competent in subject matter area and in adult learning and teaching.	Personal counseling. Faculty spends a block of time with a group of students.	Counseling and advising and caring teachers are empowered to believe they can help students. Teacher capabilities are constantly monitored.	Counselors are coordinators. Instructors are facilitators of participant performance.	Counseling and top management support needed. Teacher knows adult education, functional context training and the company culture.	Sensitive teachers with interactive style establish rapport often with first-hand knowledge and experience in learner's field.	Need counseling.
FAMILY AND/OR COMMUNITY INVOLVEMENT	Parent participation is crucial.	Family support system, including child and dependent care. Intergenerational learning. Employer, government, education community involvement.	Intergenerational literacy is emphasized, and there is interest in idea of teaching whole family as learning unit.		Community-based or related.	High involvement of local business and industry.	Community involvement is in the form of advisory committees for curriculum feedback.	Community organizations often help identify participants, and sometimes train them.	Need to connect to work team or unit, division and/or to the company as a whole.	Some programs are open to spouses and dependents of workers.	Worksite benefits should include daycare on site.
VARIED REAL-WORLD MATERIALS/MEDIA	Real objects are used as aids as well as a variety of real world materials.	Use variety of media and materials, including documentary and entertainment television and functional employment-related materials.	Variety of real world materials should be functional contextual. And they should reflect learner's interest, especially occupational.	Use actual materials from assorted job categories. Training takes place on actual equipment or simulator.	Specified learning outcome determines instructional strategy, materials, media and learning environment.	Use vast selection of published and teacher-made trade related materials.		Use alternative instructional methods and settings, texts and media.	Multiple-use training. Vary forms of delivery and use actual corporate materials.	Variety of real world materials used that relate to learner's occupational, citizenship, family or union context.	Include tasks and materials that fit the specific job contexts. Use actual job materials. Derive materials from student requests as well.
TECHNOLOGY: COMPUTER, CALCULATOR AND VIDEO ASSISTED	Use calculators and computers for teaching higher-level skills.	Computer assisted and computer introduced.	Computer-assisted; AV, videodisks used. Need for human support is inversely related to educational level.	Computer-assisted, computer-aided, AV and videodisks used.	Utilize video, computer-assisted and computer-based interactive systems and support systems.	Computer-assisted; AV; interactive video. Computers and calculators are used to perform job tasks.	Heavy utilization of technology-assisted teaching aids.	Computer-assisted instruction is used.	Computer-based; video-taped; interactive video; multimedia.	Audio, video, computer and interactive technologies used for instruction and managing learning.	Use computers where appropriate software is available and develop related software to meet company needs.
EXPERIENTIAL	Build on learner's informal knowledge.	Experiential: rooted in learners' own experience.	Build in background knowledge.	Reading assignments should build on prior experiential and oral language base.	Should be experientially-based where possible and recognize experience in all cases.	Active, participatory hands-on experiences are typical.	Start with what learner knows and doesn't know.	Start where learners are currently and allow them to finish when their goals are accomplished. Career exploration and on-the-job training are important.	Build on everyone's experience.	High value placed on learning by doing.	Build on workers' prior knowledge of tasks and jobs. Show immediate connection between what learner knows and written material.
INDIVIDUALIZED	Means of teaching the curriculum to all children will vary. There is good research to show diversity of teaching/learning as critical.	Meet individual needs.	Individualized curriculum reflects students' goals, interests, expectations and needs, especially for hardest-to-reach.	Individualized.	Take into account individuality of learners.	Individualized instruction.	Individualized diagnosis, perscription and solution.	Individualized.	Develop individual lesson plans.	Individualized plans reflect learner's needs, preferences and learning styles.	Address personal real on-the-job literacy needs where appropriate.